

TABLE I
RQ1. NUMBER OF NFP-IMPROVING COMMITS IN EACH REPOSITORY (% OF TOTAL COMMITS IN REPOSITORY). REPOSITORIES WITH ZERO NFP-IMPROVING COMMITS ARE NOT LISTED.

App Name	Execution Time Commits	Memory Commits	Bandwidth Commits	Frame Rate Commits	Total NFP commits
Android CUPS Print	1 (0.36%)	1 (0.36%)	1 (0.36%)	0	3 (1.09%)
Apple Flinger	1 (0.22%)	0	0	0	1 (0.22%)
Calculator	11 (0.96%)	1 (0.09%)	0	1 (0.09%)	13 (1.14%)
Call Recorder	0	2 (0.13%)	0	1 (0.06%)	3 (0.19%)
DNS66	4 (1.17%)	8 (2.34%)	1 (0.29%)	0	10 (2.93%)
F-Droid	56 (0.89%)	15 (0.24%)	9 (0.15%)	6 (0.10%)	85 (1.38%)
Firefox	10 (0.35%)	4 (0.15%)	2 (0.08%)	2 (0.08%)	18(0.66%)
Frozen Bubble	1 (0.64%)	3 (1.91%)	1 (0.64%)	0	3(1.91%)
G-Droid	2 (0.32%)	0	2 (0.32%)	0	3(0.48%)
Gadgetbridge	9 (0.17%)	17 (0.33%)	0	2 (0.04%)	28 (0.62%)
Mi Mangu Nu	6 (0.33%)	6 (0.33%)	0	0	12 (0.66%)
NewPipe	24 (0.41%)	16 (0.26%)	10 (0.17%)	3 (0.05%)	50 (0.82%)
KM Total	125	73	26	15	229
AntennaPod	10 (0.14%)	7 (0.10%)	0	1 (0.01%)	18 (0.25%)
Avare	0	3 (0.17%)	0	0	3 (0.17%)
CalanderNotification	0	1 (0.10%)	0	0	1 (0.10%)
EasyToken	0	1 (0.98%)	0	0	1 (0.98%)
Gigaget	0	1 (0.78%)	0	0	1 (0.78%)
Glt-companion	0	3 (0.62%)	0	0	3 (0.62%)
KernelAuditor	0	4 (0.30%)	0	0	4 (0.30%)
Koreader	5 (0.06%)	11 (0.14%)	0	0	15(0.19%)
Lighting-Browser	2 (0.09%)	13 (0.61%)	0	0	15 (0.71%)
LnWallet	0	1 (1.13%)	0	0	1 (1.13%)
OpenBikeSharing	0	1 (0.26%)	0	0	1 (0.26%)
OpenFoodFacts	0	1 (0.01%)	0	0	1 (0.01%)
OpenMw	0	1 (0.12%)	0	0	1 (0.12%)
PixivForMuzei	0	8 (0.91%)	0	0	8 (0.91%)
PortAuthority	1 (0.10%)	19 (1.86%)	1 (0.10%)	0	19 (1.86%)
ProExpanse	0	2 (0.55%)	0	0	2(0.91%)
Rbb	0	1 (0.04%)	0	0	1 (0.04%)
SMSSync	0	1 (0.06%)	0	0	1 (0.06%)
TowerCollector	0	1 (0.17%)	0	0	1 (0.17%)
TVHGuide	0	2 (0.55%)	0	0	2 (0.55%)
CM Total	19	81	1	1	98
Total	142	154	27	16	327

TABLE II
PROPERTIES OF KEYWORD MINED AND *Classifier Mined* REPOSITORIES

Name	No. Commits	Stars	Age (Days)	Contrib.	Forks	KLoC
Aeons End	26	5	963	1	5	3
Android CUPS Print	274	142	1802	14	45	4.9
ANNO 1404	13	1	1127	2	2	5.0
Apple Flinger	463	22	972	37	-	11.8
Calculator	1142	190	4220	18	286	32.8
Call Recorder	1590	97	1523	10	-	6.1
DNS66	341	1400	1304	15	153	7.8
Editor	405	110	1038	14	38	5.3
F-Droid	6157	1382	3492	99	-	85.1
Firefox	2592	1500	1249	82	585	309.2
FOSS Browser	927	427	1292	22	165	15.9
Frozen Bubble	157	71	3829	4	64	38.4
G-Droid	625	78	557	60	-	17.2
Gadgetbridge	5163	74	1587	298	40	103.9
Gloomy Dungeons	46	73	2006	4	38	91.2
MaterialOS	139	117	1834	7	37	14.5
Mi Mangu Nu	1827	230	1839	23	60	33.3
Mighty Knight	18	11	1250	2	12	1.0
NewPipe	6054	8000	1711	439	1200	82.9
<i>AntennaPod</i>	7151	3300	2864	169	909	112.2
<i>avare</i>	1811	109	2698	28	116	87.8
<i>Calendar Notification</i>	958	88	1549	7	36	35.4
<i>Easy Token</i>	102	40	2115	1	13	6.6
<i>GigaGet</i>	128	128	1998	2	51	5.5
<i>glt-companion</i>	482	9	2334	1	90	11300
<i>Koreader</i>	7990	7500	3096	152	819	143.2
<i>Kernel Auditor</i>	1347	22	1963	1	376	68.6
<i>LightningBrowser</i>	2125	1700	2642	72	738	77.1
<i>Inwallet</i>	88	16	118	4	10	112.5
<i>OpenBike Sharing</i>	388	58	2103	28	48	7
<i>openfoodfacts</i>	7332	529	1830	109	391	386.9
<i>openmw</i>	865	170	2068	5	20	22.3
<i>Pixiv for Muzei</i>	883	73	381	9	9	6.3
<i>Port Authority</i>	1024	168	2117	13	52	7.3
<i>ProExpense</i>	365	34	42	3	6	20.5
<i>rbb</i>	2347	34	3041	1	4	39.9
<i>SMS Sync</i>	1816	904	3650	21	455	62.4
<i>Tower Collector</i>	580	72	1529	3	72	34.6
<i>TVH Guide</i>	364	44	3293	2	25	8.5